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First record of *Caradrina monssacralis* (Varga & L. Ronkay, 1991) (Insecta: Lepidoptera, Noctuidae) from Kazakhstan

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Abstract: A little-known species of Lepidoptera, *Caradrina monssacralis* (Varga & L. Ronkay, 1991), is recorded in Kazakhstan for the first time. This is a westernmost known locality of the species. Adults, male genitalia and the habitat of the species are illustrated.

Key words: Central Asia; new record

The noctuid genus *Caradrina* Ochsenheimer, 1816 was revised by Hacker (2004). It is widely distributed in the Eurasia, North America and Africa and contains 156 described species that are grouped into eight subgenera (Hacker 2004; Hacker and Legraine 2006; Gyulai 2006). *Caradrina monssacralis* (Varga & L. Ronkay, 1991) was described from southwestern Mongolia, and it was considered as an endemic for Mongolia (Varga and Ronkay 1991; Hacker 2004).

Since 2003, we conducted an intensive faunistic study of the Noctuoidea fauna of the northeastern Kazakhstan. In the late summer 2012, a small series of undetermined male *Caradrina* specimens was collected in the southwestern part of Pavlodar Region. Later, in the late summer 2015, an additional series of specimens of the same species was collected in the western part of the Tarbagatai Ridge in East Kazakhstan. Externally, the specimens surprisingly resembled Mongolian *C. monssacralis*, and the study of their genital structures confirmed their conspecifity.

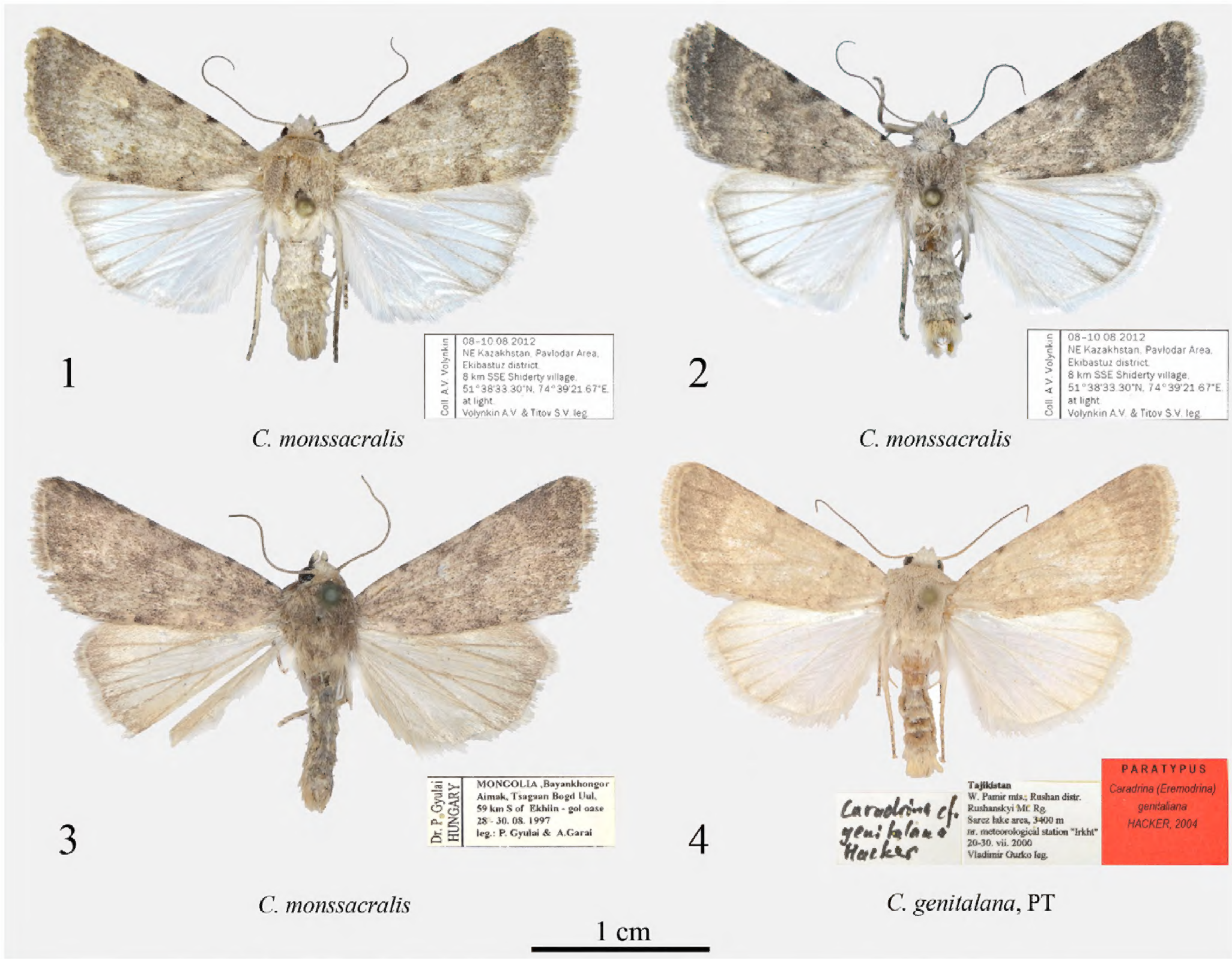
We collected the moths using ultraviolet and mercury light-traps. The genitalia were dissected and mounted in euparal on glass sides. Photographs of the genitalia where made using a Zeiss Stemi 2000-C microscope and Zeiss AxioCam Erc 5c camera, and processed in Adobe Photoshop CS4® software. Photographs of moths where taken using a Nikon D3100/AF-S the camera with a Nikkor 18–55 mm lens. The specimens are deposited in the collection of Siberian Zoological Museum of the Institute of Animal Systematics and Ecology, Siberian Branch of Russian Academy of Sciences (SZMN; Novosibirsk, Russia) and the private collections of Anton Volynkin (AVB, Barnaul, Russia) and Sergey Titov (STP, Pavlodar, Kazakhstan).

Caradrina* (*Eremodrina*) *monssacralis (Varga & L. Ronkay, 1991)

Eremodrina monssacralis Varga & L. Ronkay, 1991, *Acta Zoologica Hungarica* 37: 299, pl. 3, fig. 36 (Type locality: Mongolia, Govi-Altai aimak, Govi Altai, 6 km N Tögrög).

Material examined: 1 male, 08–10.VIII.2012, northeast Kazakhstan, Pavlodar Region, Ekibastuz District, 8 km south-southeast of Shiderty village, 51°38′33.30″ N, 074°39′21.67″ E, at light. A.V. Volynkin and S.V. Titov leg., genital slide AV1208 Volynkin, deposited in SZMN, catalogue number: SZMN-Caradrina-001; 3 males, same data, coll. AVB; 4 males, same data, coll. AVB; 1 male, 22.VIII.2015, eastern Kazakhstan, Urdzhar District, southern foothills of Tarbagarai Mountains, Kyzylbeltau Mountains, 4 km east of Altynshoky (old Predgornoe) village, 47°10′49.1″ N, 081°07′35.6″ E, 697 m above sea level, bottom of dry rocky slope near small creek, A.V. Volynkin leg., slide AV1647 Volynkin, deposited in SZMN, catalogue number: SZMN-Caradrina-002; 2 males, same data, coll. AVB.

Additional material examined: 3 males, Mongolia, Bayankhongor aimak, Tsagaan Bogd Uul, 59 km south of Ekhiin-Gol oase, 28–30.VIII.1997, leg: P. Gyulai and A. Garai, slide GB5939 Behounek (Gottfried



Figures 1–4. *Caradrina* spp., adults (dorsal view). **1:** *C. monssacralis*, male, northeastern Kazakhstan (AVB); **2:** *C. monssacralis*, male, northeastern Kazakhstan (AVB); **3:** *C. monssacralis*, male, southwestern Mongolia, Tsagaan Bogd Uul Mts (G. Behounek collection, Germany); **4:** *C. genitalana*, paratype, male, Tajikistan, W Pamir Mountains (G. Behounek, Germany collection).

Behounek collection, Grafing, Germany).

Externally, the specimens collected in Kazakhstan (Figures 1 and 2) have no significant differences from Mongolian specimens (Figure 3), and the male genitalia (Figures 5–7) are also very close. The second species of the *C. monssacralis* species-line known from Kazakhstan (from southeastern mountain part of country), *C. genitalana* Hacker, 2004 (Figure 4) differs externally from *C. monssacralis* by the somewhat smaller size and paler forewing ground color. The male genitalia of Mongolian specimens of *C. monssacralis* (Figure 7) are very close to those of *C. genitalana* (Figure 8), and differ clearly only by the structure of the dorsal subbasal area of cornuti: in *C. monssacralis* it presented as a long band of cornuti while in *C. genitalana* it is presented as a small bunch of cornuti. The male genitalia of Kazakhstan specimens (Figures 5 and 6) have the long subbasal band of cornuti and have no significant differences from those of Mongolian *C. monssacralis* specimens (Figure 7), so the recently discovered Kazakhstan populations definitely belong to *C. monssacralis* and not to *C. genitalana* (H. Hacker, pers. comm.).

Earlier, *C. monssacralis* was known only from Mongolia (Varga and Ronkay 1991; Gyulai and Ronkay 1999; Hacker 2004). The easternmost Kazakhstan collection site in the Tarbagatai Ridge is 1,050 km distant from the previously known westernmost locality in Mongolia (Figure 9). The new records are first for the Kazakhstan fauna and westernmost known localities of the geographical distribution of this species. In northeastern Kazakhstan, the species was found on rock outcrops in the steppe (Figure 10); in eastern Kazakhstan (the Tarbagatai Ridge), the species was found on dry rocky steppe slopes (Figure 11).

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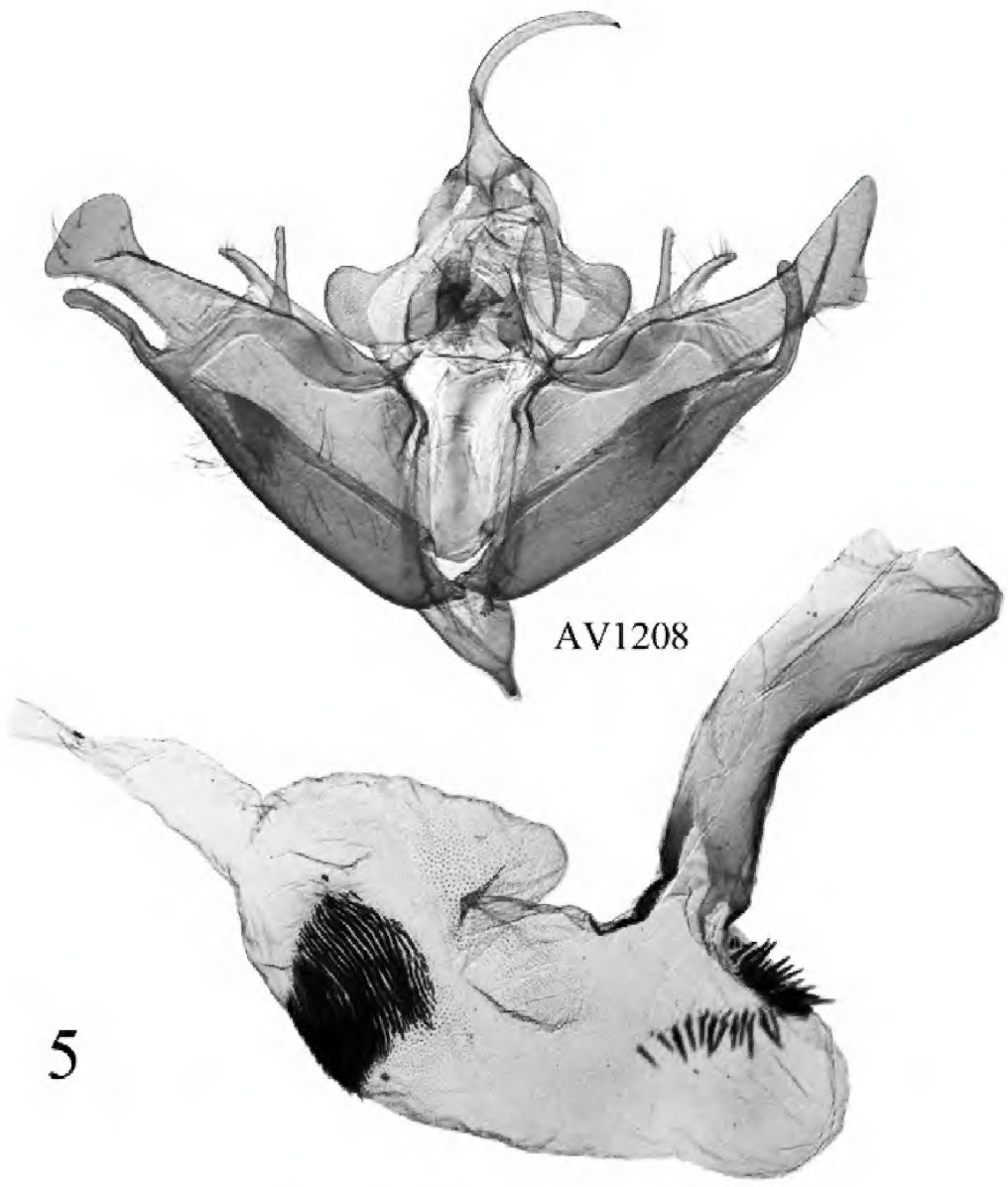
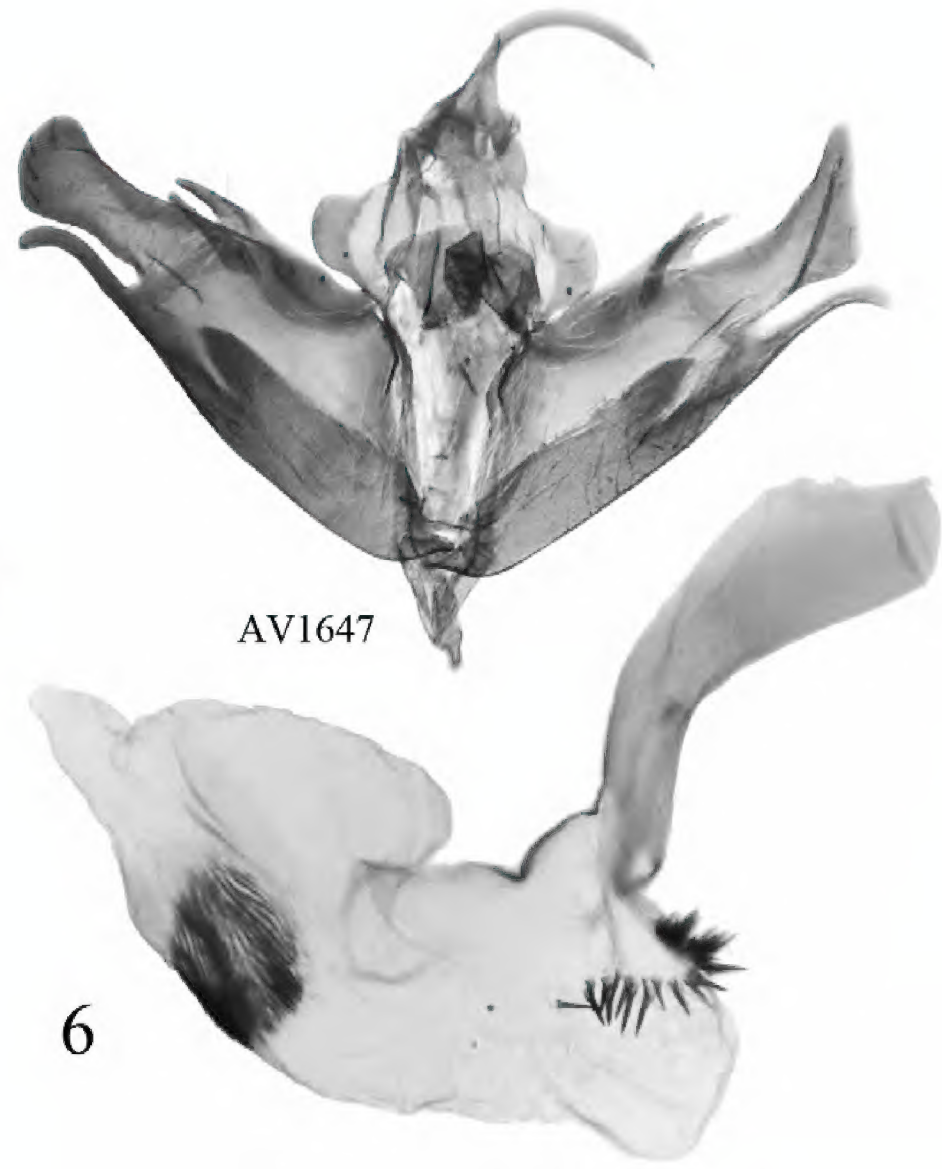
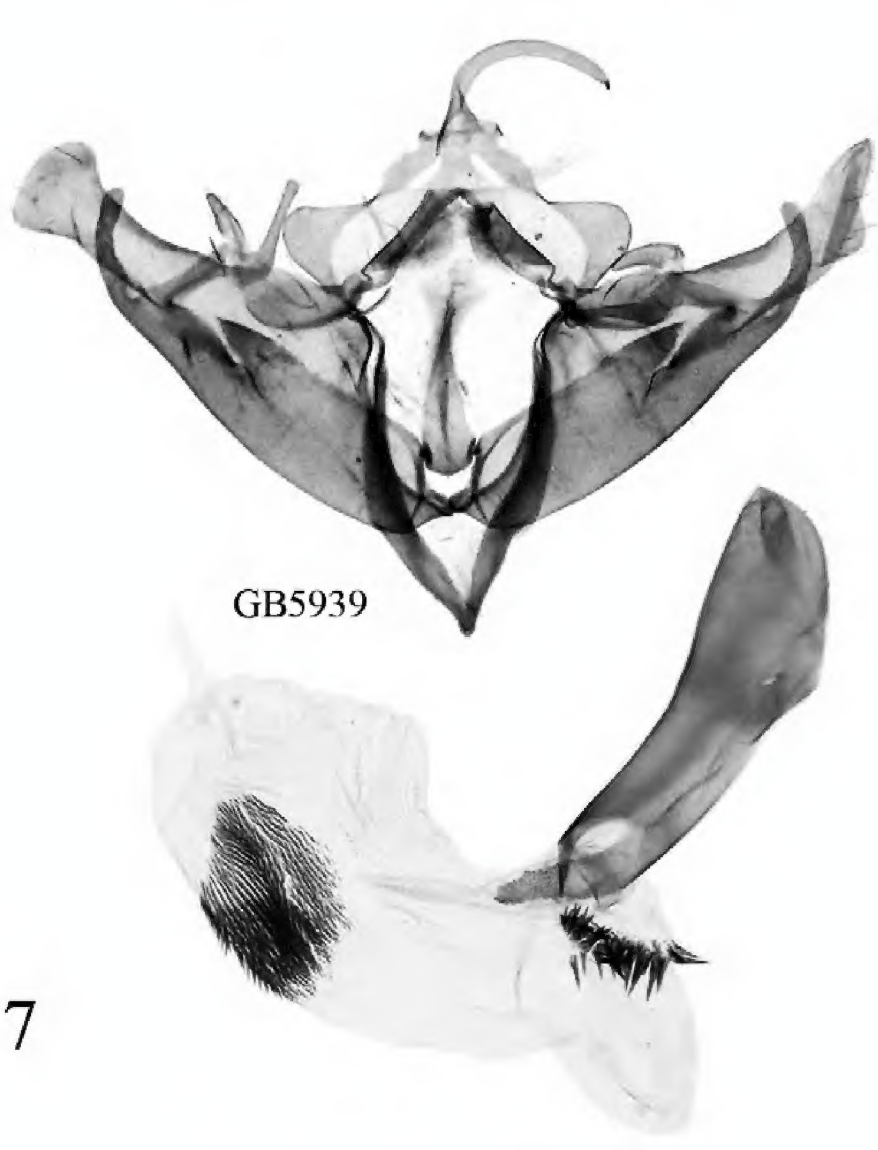


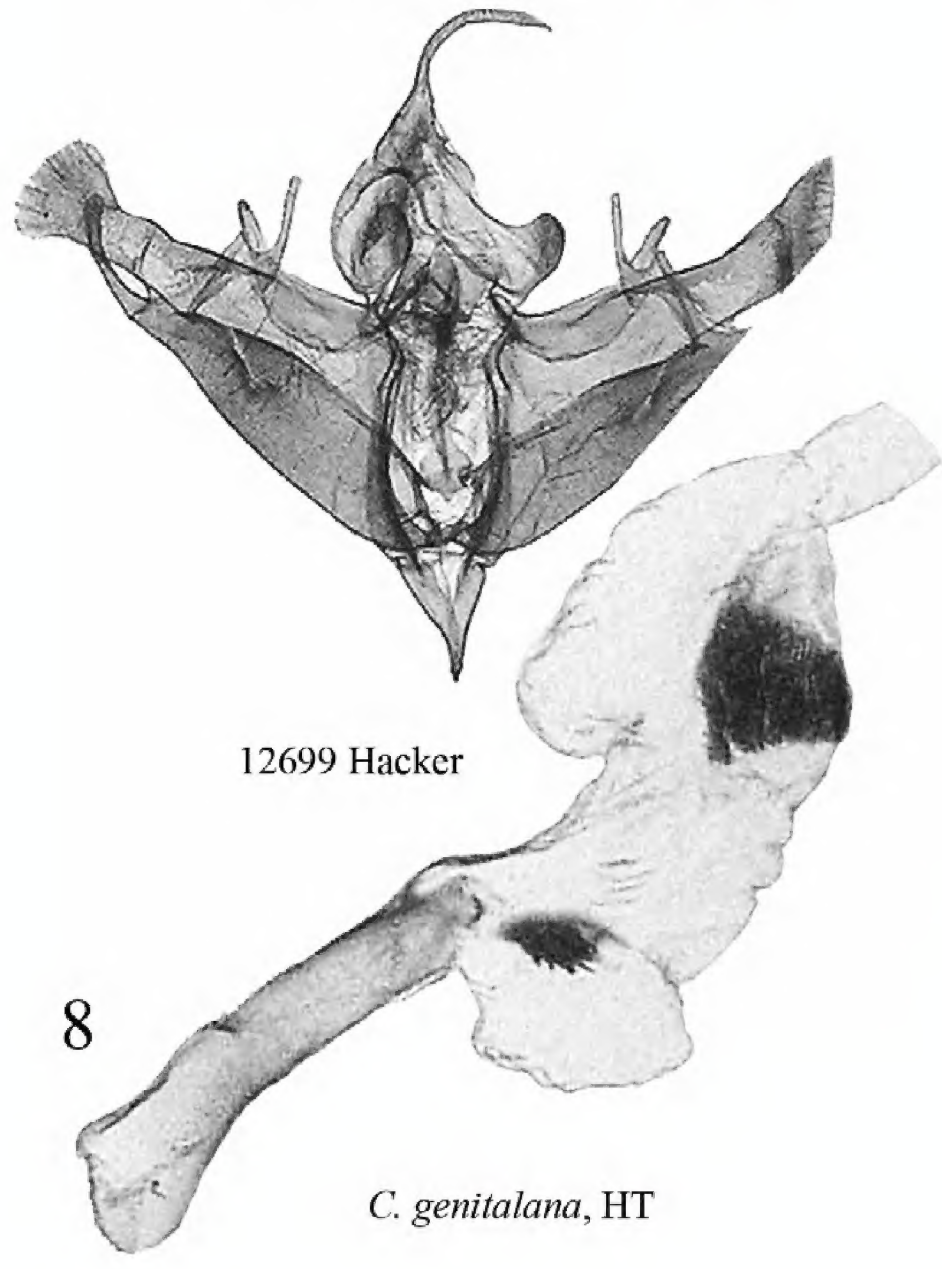
C. monssacralis (NE Kazakhstan)



C. monssacralis (E Kazakhstan)



C. monssacralis (SW Mongolia)



C. genitalana, HT

Figures 5–8. *Caradrina* spp., male genitalia (ventral view). **5:** *C. monssacralis,* northeastern Kazakhstan, slide AV1208 Volynkin; **6:** *C. monssacralis,* eastern Kazakhstan, Tarbagatai Ridge, slide AV1647 Volynkin; **7:** *C. monssacralis,* southwestern Mongolia, slide GB5939 Behounek; **8:** *C. genitalana*, holotype, Kyrgyzstan, Kara-Balta valley, slide 12699 Hacker (after Hacker 2004).

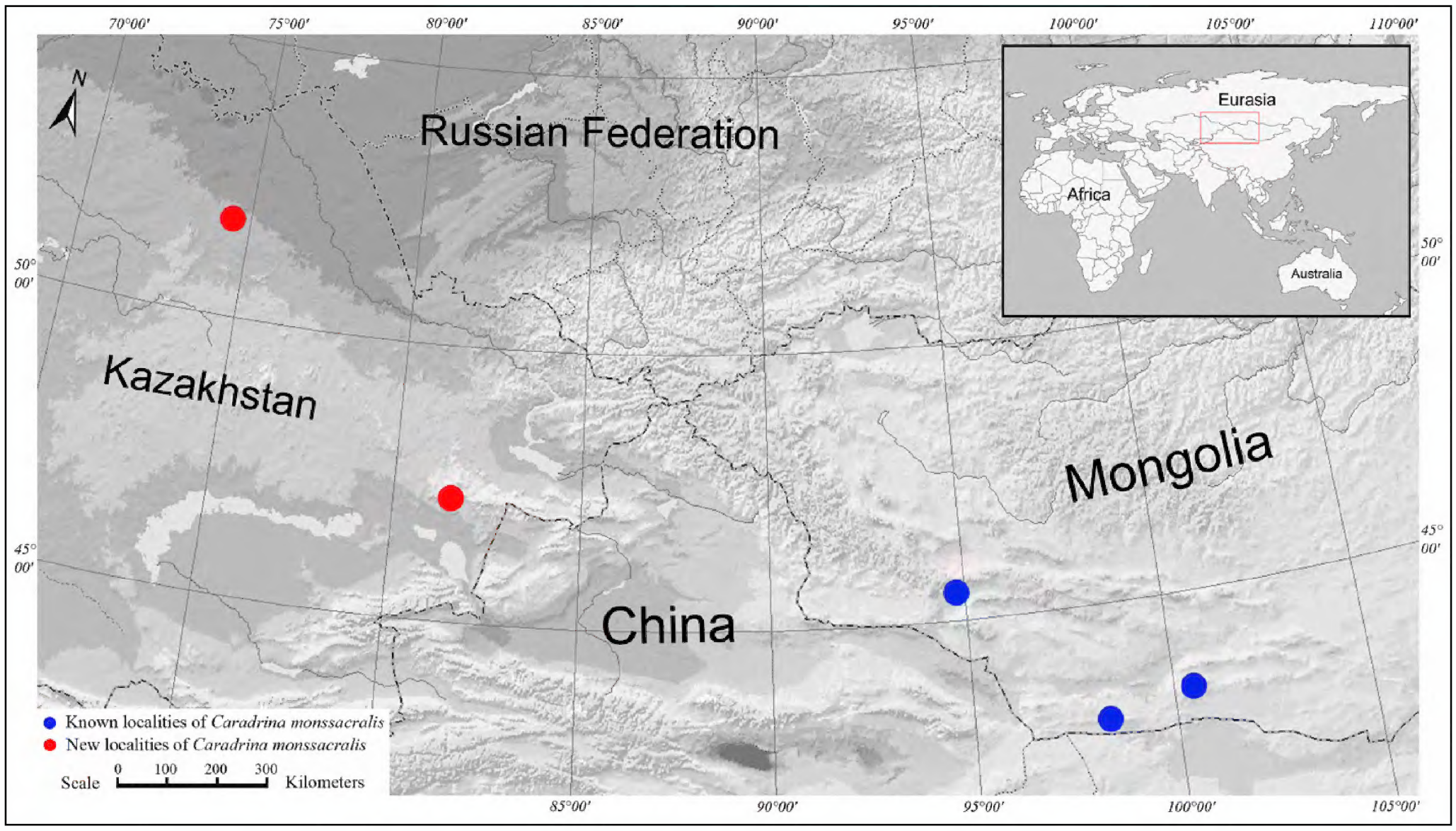


Figure 9. Map of known and a new localities of *Caradrina monssacralis.*

Figure 10. Northeastern Kazakhstan, Pavlodar Region, Ekibastuz District, 8 km south-southeast of Shiderty village, 51°38′33.30″ N, 074°39′21.67″ E, the habitat of *Caradrina monssacralis.*

Figure 11. E Kazakhstan, Urdzhar District, southern foothills of Tarbagarai Mountains, Kyzylbeltau Mountains, 4 km east of Altynshoky (old Predgornoe) village, 47°10′49.1″ N, 081°07′35.6″ E, the habitat of *Caradrina monssacralis.*

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